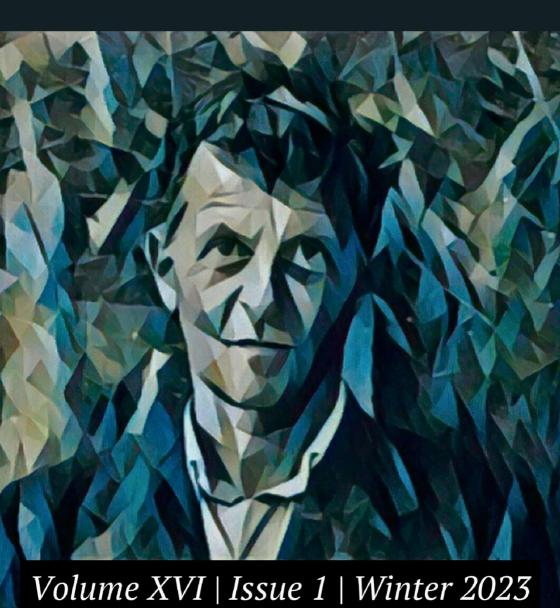


(I) DIALECTIC







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"I may not have been sure about what really did interest me, but I was absolutely sure about what didn't."

- Camus, The Stranger

To The Reader,

We warmly welcome you to the sixteenth volume of Dialectic. The release of this edition marks the break of a two year long hiatus in the printing of our journal, which has now been publishing student work from within and outside of the university for close to seventeen years. I must begin this introduction by thanking our recent alumnus and previous editor-in-chief Joseph Batchelor, whose devoted work towards restarting the committee last year has led to the publication of this volume. The spirited interest of both our committee and undergraduate writers has enabled the continued creativity of Dialectic's content, which we hope will last for years to come. The quantity and quality of writing we have received from students was particularly excellent this year, despite the pause in publications, and could have merited the printing of a far thicker volume.

Now, onto the philosophy. There is no chosen theme for this journal; though perhaps if we were to insist on one, it would be breadth. Between our three application categories we have selected four papers that show off a range of different philosophical topics and argumentation which we hope may interest and encourage further engagement from our readers. As always, replies and original contributions are welcomed at dialecticjournalsubmissions@gmail.com.

Our volume begins with an article by Ben Jordan which explores the relation between film and philosophy, arguing for a re-evaluation to take place within academia regarding the philosophical merit of film. It



does this through an engagement with arguments made in Parsley Livingston's book *Cinema, Philosophy, Bergman* and proposes a revised thesis for investigating the philosophical nature of films.

Next, we move onto metaphysics. Catherine Armstrong's paper on consciousness titled "Does the overdetermination argument show that physicalism about phenomenal consciousness must be True?" provides a rigorous and logical defence of physicalism. It starts from the proposition that phenomenally conscious states are equivalent to physical states, thus denying the mind-body dualist separation, and concludes that the overdetermination argument shows physicalism is less costly in terms of 'parsimony' when compared to a dualist approach.

This will be followed by Bryn Gatehouse's paper "Should we have ontological commitments to numbers?". This paper aims to critically analyse a popular view regarding the abstract ontology (and seemingly independent nature) of numbers. This is achieved by following an issue within mathematical epistemology which may lead to doubts over whether numbers are independent of thoughts or not. It argues for a rejection of a 'Platonist' conception of numbers as being mindindependent; instead preferring the intuitionist solution in which numbers are mental constructs 'brought into being to serve as proofs' in mathematical systems.

We will end with our first-year category winner Zuna Hechelova writing on the continentals within her article: 'Compatibility of humanism with Sartre's existentialism and Heidegger's fundamental ontology'. The essay focuses on outlining differences between Sartre's existentialism and Heidegger's ontology by addressing their contrasting perspectives on the humanist approach.

We hope that you may find one of these papers to be within your realm of intrigue in philosophy, and if failing so, they inspire you to write to us. We are accepting academic papers, and for our next edition, we



would love to be able to publish student book reviews at the end of the journal. Reviewed books needn't be by a philosopher author; any writing, fictional or otherwise, that has inspired philosophical thoughts will suffice. Keep in touch with us through our Instagram handle:

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Special thanks to Eliza Weeks, who designed our front graphic. Their art can be found at:

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Tommy Cumming
Editor
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Can Films Be Philosophy? Reconciling the Problem of Paraphrase and the Imposition Objection by Revising the Bold Thesis.

Ben Jordan University of York (General Category)

Intro

In this article I will critically examine and evaluate the question of whether film can be philosophy. In particular, I will focus on two of the objections raised against this idea: the problem of paraphrase, and the imposition objection. The problem of paraphrase, as outlined by Paisley Livingston in his *Cinema, Philosophy, Bergman* (2009), consists of the idea that film cannot be a form of philosophy as it is reliant upon writing to paraphrase its ideas. On the other hand, the imposition objection contends that a film *can* contain ideas, but that any such ideas that appear to arise have in fact been imposed upon the film by an interpreter.

I will attempt to refute both of these arguments, and criticise the way that Livingston characterises the debate as to whether film can be philosophy in terms of a dichotomy between a bold and moderate thesis. I will argue that Livingston is incorrect to discount the bold thesis on the basis of the problem of paraphrase, and propose that we can overcome the problem of paraphrase through revising one of the constituents of the bold thesis, which I have termed the 'condition of exclusive means'. In its place I will advocate for a 'condition of explanatory power', and argue that adopting this condition can help us to construct a revised version of the bold thesis that is significantly less restrictive than the original. I will refer to this thesis as the 'revised thesis'.



I will then adopt the revised thesis to argue against the imposition objection, proposing that the philosophical merit of film is *not* dependent upon the presence of an interpreter. Finally, I will then consider the extent to which 'ambiguous cinema' can be said to undermine both the original bold thesis and the revised thesis that I have advocated for throughout this article; ultimately, I will conclude that my revised thesis is a viable alternative to the bold thesis, and that Livingston's characterisation of the debate is reliant upon a false dichotomy.

The bold and moderate thesis

Can film be philosophy? This question is part of a larger debate that has implications for the nature of philosophy as an academic discipline. Perhaps inevitably, any inquiry into a question of this type will have to consider some of the conventions that dictate and restrict what constitutes philosophy. One such account of these conventions is presented by Paisley Livingston in the first chapter of his 2009 book *Cinema, Philosophy, Bergman.* In this chapter, Livingston outlines the two prevailing perspectives on the question of whether film can be philosophy: the bold thesis, and the moderate thesis.

The bold thesis is significantly more restrictive than the moderate thesis, as it proposes that in order to be considered philosophy, a film must make "historically innovative and independent contributions to philosophy *by means exclusive* to the cinematic medium" (Livingston, 2009, p.21). I will refer to this throughout this paper as the 'condition of exclusive means'. The moderate thesis, on the other hand, weakens the constituents of the bold thesis and concedes that though certain films can be said to engage with existing philosophical issues, they are ultimately incapable of making "historically innovative and independent" (Livingston, 2009, p.21) contributions to the discipline in the way that the bold thesis requires of them (Livingston, 2009, p.38).



Like most philosophers of film, Livingston rejects the bold thesis on the grounds of the "problem of paraphrase" (Livingston, 2009, p.21), and advocates instead for a version of the moderate thesis. However, in the next section of this paper, I will argue that it is possible to overcome the problem of paraphrase by adopting a revised version of the bold thesis which replaces its condition of exclusive means.

The problem of paraphrase

The problem of paraphrase is peculiar to the bold thesis, and arises as a consequence of its condition of exclusive means. The problem of paraphrase is predicated on the conviction that film is reliant upon writing to express its ideas. It argues that as writing is *not* exclusive to the cinematic medium, film cannot ever be considered an example of philosophy as a result.

The problem of paraphrase takes the form of a four premise [P1-4] argument that purports to motivate the conclusion [C] that film cannot contribute to philosophy. Its first premise [P1] reiterates the condition of exclusive means, and imposes the rather restrictive view that film can only contribute to philosophy if it does so by means that can conclusively be said to be exclusive to the cinematic medium (Livingston, 2009, p.21). The rest of the argument runs thus:

P2: If film uses means that are not exclusive to the cinematic medium to express (or paraphrase) its ideas, it cannot contribute to philosophy.

P3: Film has to use writing to express (or paraphrase) its ideas.

P4: Writing is not exclusive to the cinematic medium.

C: Film cannot contribute to philosophy.

(Livingston, 2009, pp.21-23).

There are some obvious issues with this argument that I will consider over the course of this section. For one, it appears to conflate



contributing to something and being something. The most we can infer from its conclusion is that film cannot contribute to philosophy, not that it cannot be philosophy. However, in order to be sufficient to motivate us to discount the bold thesis, the problem of paraphrase must conclusively establish that film cannot *be* philosophy. It is clear that *being* something is a far more substantive notion than contributing to something. For example, a work of art criticism could be said to contribute to an artistic discipline without itself being a work of art.

Furthermore, this argument also gives us no clear incentive to accept its tacit inductive leap that contribution is a prerequisite to being. There is an obvious vagueness problem that arises when we tie these two notions together, as there is no longer any clear threshold that can be used to determine whether a particular contribution is significant enough to be considered an example of a particular discipline. When does a 'contribution' to philosophy become a work of philosophy in its own right? Any answer to this question that we attempt to give will invariably be arbitrary.

I would argue that making contribution a prerequisite to being simply raises the bar too high. There are plenty of examples of popular films that not only consider philosophical questions – such as *The Matrix* (Wachowski and Wachowski, 1999) and *The Truman Show* (Weir, 1998) – but also provide some considerable philosophical insights into the topic of their inquiry.

For example, both *The Matrix and The Truman Show* contemplate the nature of our perceptions and their relationship to reality. In *The Matrix*, the Wachowskis depict reality as a dystopian simulation created by superintelligent machines to distract humanity so they can harvest our bodies as an energy source. On a similar note, *The Truman Show* also depicts reality as an illusion, focusing instead on the character of Truman, an ordinary man who is entirely oblivious to the fact that his entire existence is constructed as the basis of a reality TV show.



Like in Plato's allegory of the cave (Plato, 2007, 514a–520a), both Neo (the protagonist of *The Matrix*) and Truman ascend from their previously illusory state of existence into a higher plane of consciousness, which Plato saw as being indicative of the philosophical method. However, in spite of this no rigorous academic background in philosophy is required to engage with the ideas presented in *The Matrix* or *The Truman Show*. It is rare that a comparable philosophical paper on the same topic provides as much insight into the nature of perception of reality as either of these films, yet even an average paper would still be seen as indicative of philosophy regardless of whether it made a significant contribution to the discipline.

For the paper, it is *not* required as a prerequisite that it contribute to philosophy in order to be considered an example of philosophy; even an unremarkable undergraduate paper on this topic still would be said to *be* philosophy. However, as the problem of paraphrase indicates, this same condition is required of not only *The Matrix* and *The Truman Show*, but every film that puts on the pretence of being philosophy. I would argue that there is no basis to this absurd double standard.

Furthermore, the problem of paraphrase begins to look even more absurd when you probe into its claim that film cannot contribute to philosophy because it is dependent upon writing to express its ideas. Most philosophy is dependent upon writing to express its ideas, and on account of its popular appeal it could be argued that *The Matrix* made a significant contribution to philosophy through introducing a variety of philosophical topics to a popular audience. However, *The Matrix* was not dependent upon writing to make this contribution, as through the act of watching the film the audience were introduced to these topics. I would argue that in this case this is indicative of a means that is exclusive to the cinematic medium, contrary to what the problem of paraphrase proposes.



Furthermore, many canonical works of philosophy, such as Voltaire's *Candide* (Voltaire, 1759), are arguably reliant on the medium of literature to communicate their ideas. For this reason, I would argue that literature and philosophy are not mutually exclusive. However, this raises an uncomfortable question for proponents of the bold thesis. Why is it that film and philosophy are seen as being mutually exclusive? I would argue that there is no reasonable answer to this question, as once again it is indicative of an arbitrary double standard predicated on a form of prejudice towards established academic subjects.

As stated previously, the problem of paraphrase is only an issue for the bold thesis as a result of its insistence on the condition of exclusive means. For this reason I would argue that in order for a version of the bold thesis to be in with a chance of overcoming the problem of paraphrase, the condition of exclusive means must be either weakened or discarded. The condition of exclusive means is far too restrictive, and I would argue that this provides a clear incentive to revise the bold thesis, which I will begin to do in the next section of this article.

Evaluating the imposition objection

The imposition objection argues that the philosophical value of film is not inherent to it, and that any such values are instead imposed upon it by an interpreter. Furthermore, it also argues that any philosophical values that a film has are invariably reducible to ideas that exist (and are expressed) independently of the film itself (Wartenberg, 2007, p.25). For proponents of this objection, the interpreter is the thing that 'does' the philosophy, rather than the film itself; because the film does not 'do' philosophy, the film cannot 'be' philosophy. Though this objection is arguably more potent for the bold thesis than the problem of paraphrase, in this section I will attempt to argue a case against it.

For the purposes of his argument, Wartenberg interprets the imposition objection as a restriction that encourages us to refrain from imposing an



interpretation on a film when it is inappropriate to do so (Wartenberg, 2007, p.26). However, there is an obvious vagueness problem that arises here, as Wartenberg does not make it clear what constitutes an appropriate context. One potential solution to this is to use the creator of a film as a criterion to determine what constitutes an appropriate context. In this case, we could then refer back to the creator's intentions to adjudicate interpretations of a film; any interpretation that was intended by the creator cannot have been imposed upon it by an interpreter, or so the argument goes.

However, this strategy has the potential to be problematic. For one, it requires us to provide an account of how we attribute and recognise intentions. Though most philosophers are not in a privileged enough position to be able to ask a creator what their intentions were, there is an argument to say that we do not have to rely upon the input of a creator to determine their intentions. For instance, David Lynch is a notoriously taciturn director who never speaks about his intentions, but that has not stopped interpreters from attempting to infer his intentions from his films. Perhaps it is a mistake to view intentions as inscrutable entities that are inexplicable to us unless dictated directly.

In this section I will consider how we can recognise intention in a film, and argue that we can begin to do so through considering a cinematic technique known as the Kuleshov effect. As this technique is present in every film, to the point where its presence is integral to what distinguishes a film *as* a film, I will argue that we can see the Kuleshov effect as an example of a means that is exclusive to cinema.

The Kuleshov effect arises as an inevitable consequence of the interaction between two or more sequential shots. It refers to the process through which spectators derive more meaning from the juxtaposition of two sequential shots than from each shot viewed in isolation (Wartenberg, 2007, p.45). The Soviet film theorist Lev Kuleshov demonstrated this technique in the 1910s, during an experiment in which



he juxtaposed the same shot of a man with a series of three distinct sequential shots: a bowl of soup, a dead child, and a woman. Participants in the experiment interpreted the man's expression in a variety of ways, relative to the shot that it was juxtaposed with in the sequence: for each of the three distinct sequential shots, the man was interpreted as expressing hunger, grief, and desire respectively, even though his expression was the same each time.

Through using the Kuleshov effect, editors can communicate ideas and intentions in a way that is implicit in the film itself. In this respect the Kuleshov effect can be seen as a means that is exclusive to cinema, as this technique is integral to the structure of editing. The imposition objection contends that a film is dependent upon the presence of an interpreter to elicit its ideas, and as a result does not acknowledge the possibility that a film can communicate an idea independently of an interpreter. However, there is a clear case to say that the Kuleshov effect evinces that a film can "express a thought" (Wartenberg, 2007, p.45) using means that are exclusive to the cinematic medium.

In this section I have cast doubt on the idea that we can appeal to the creator to resolve the imposition objection. Furthermore, I have proposed that the Kuleshov effect demonstrates how films can communicate ideas using means that are exclusive to the cinematic medium. Though I have rejected the condition of exclusive means in the previous section, I will evaluate it once more in the next section against the 'condition of explanatory power', an alternate principle that I propose.

Motivating the condition of explanatory power

Explanatory power is one distinguishing characteristic of successful theories. In order to convince us of their ideas, philosophers and scientists alike typically invoke their explanatory power as an indication of their merit. In this section I will argue that we ought to evaluate



philosophical interpretations of films in the same way, in virtue of their explanatory power. One clear benefit of this approach is its potential to provide a shield against the imposition objection. Any interpretation that can be used to make the ideas in a film more explicit cannot have been imposed upon it by an interpreter, as to a certain extent the ideas must already be present in the film itself. These interpretations do not impose ideas upon the film, but rather elicit them from the film.

In these cases, the interpretation has merit because it helps us to understand the film. Through considering whether an interpretation helps us to understand a film or not, we can begin to judge whether or not the interpreter has imposed their ideas upon the film. This is what I have coined the condition of explanatory power. We can revise the bold thesis using this condition to end up with a thesis that is not only less restrictive than the bold thesis, but also more substantive than the moderate thesis.

I will argue for this condition through considering a case in which it can be applied to adjudicate an interpretation of a film: Wartenberg's interpretation of *Modern Times* (Wartenberg, 2007, pp.44-54), Charlie Chaplin's classic satirical comedy. In *Modern Times*, Chaplin explores the alienation of the contemporary worker as a result of industrialisation through a series of comedic skits, strung together by Chaplin's eclectic editing.

Wartenberg interprets *Modern Times* (Chaplin, 1936) as a depiction of Marx's theory of alienation, In order to establish why this depiction constitutes an instance of philosophy in its own right, Wartenberg first makes a general argument about why we ought not to discount something on the basis that it depicts existing ideas (Wartenberg, 2007, pp.39-44). He is critical of the dichotomy that arises when we think about the philosophical merit of film in terms of the bold and moderate theses, and is particularly sceptical of the idea that illustrating a philosophical theory or claim is insufficient to say that a film is doing



philosophy (Wartenberg, 2007, pp.36-38). He argues that this dichotomy rests on the idea that "illustrations remain subordinate to the written text" that they depict (Wartenberg, 2007, p.41). I would argue that this view is conducive to an intellectual hierarchy that is prejudiced towards established academic subjects. It concedes that film can be a pale imitation of philosophy (as proposed by the moderate thesis), but sees its value as being contingent upon the presence of an existing work of philosophy that justifies it.

However, in spite of this I would still argue that Modern Times has philosophical merit in its own right, independently of its relationship to Marx's theory of alienation. The ideas that Modern Times depicts are not contingent upon Marx's theory, and just because Wartenberg has interpreted them in this particular context does not mean that they cannot have their own independent philosophical merit. The condition of exclusive means requires that the ideas that a film depicts exist in a vacuum, as it dictates that a film has to make a "historically innovative and independent contribution" (Livingston, 2009, p.21) in order to be considered philosophy. However, the value of the ideas that Chaplin depicts in Modern Times and the original way in which they are depicted is not depleted because they arose in the context of an existing philosophical tradition. Were this to be the case, we would be forced to discount the entire Western canon on the same basis if we accept A. N. Whitehead's famous claim that all of Western philosophy is "footnotes to Plato" (Whitehead, 1929, p.39). Wartenberg also argues that most modern philosophers tend to speculate on existing ideas without making original contributions to the discipline (Wartenberg, 2007, p.44). Yet their work is still considered philosophy.

Regardless of whether it depicts existing ideas or not, *Modern Times* invariably depicts those ideas in a unique and original way that sheds light on the claims that Marx is making in his theory of alienation. For this reason Wartenberg concludes that "it is a mistake to conclude that, just



because something is an illustration, it is not original or illuminating" (Wartenberg, 2007, p.44). To support this view, Wartenberg considers a particular use of the Kuleshov effect in the opening of *Modern Times*, in which Chaplin juxtaposes shots of sheep being sent to the slaughter with shots of workers entering a factory (Wartenberg, 2007, p.45). It is only through the juxtaposition of these shots that Chaplin's intention is communicated to the viewer through his use of the Kuleshov effect, as when viewed in isolation the intention behind either shot is not explicit.

We can see the merit of Wartenberg's interpretation here when we adopt the condition of explanatory power. The way that the two shots are juxtaposed in a linear sequence conveys an idea through Chaplin's use of the Kuleshov effect, which Wartenberg then interprets in the context of Marx's theory of alienation. The fact that his interpretation helps us to understand the two shots is testament to its explanatory power. Furthermore, when interpreted in this context this sequential interaction between the two shots can help us to understand the intention behind *Modern Times* as a whole. This indicates to me that interpreting *Modern Times* in a Marxist context is conducive to understanding the film.

However, this is not to say that the intention behind the shots is contingent upon Wartenberg's interpretation. The intention would still be there in the film even if Wartenberg had never pointed it out, as it is implicit in the editing of the film, and as a result, integral to the film itself. Furthermore, the idea does not derive its philosophical value from its relationship to the work of Marx. It is this Marxist context that has been imposed upon it by Wartenberg. We may accept or reject his arguments as to why we ought to interpret *Modern Times* in a Marxist context, but the fact remains that he could have interpreted it in another context. My proposal is that even if he had done this, the idea that his interpreted in another context. Contrary to what the imposition objection



proposes, I would argue that the interpreter does not impose the ideas, and can at most impose the context, as Wartenberg does here through interpreting *Modern Times* in a Marxist context.

Conclusion

In the same way that we read a work of philosophy to try to understand the ideas within it, we can also read a film. This is what Wartenberg does through his reading of *Modern Times*, but throughout this article I have argued that this same process can be applied to any film. However, *Modern Times* is unusual in that it is a didactic film that presents a thesis, and there is an argument to say that Wartenberg distorts the value of philosophical cinema by focusing on this particular type of film. In this conclusion, I will argue a case for how the revised thesis I have advocated for throughout this article can be applied to other, more 'ambiguous' films.

Not all philosophical cinema clearly contains an argument, as Wartenberg proposes *Modern Times* does. In this respect one might be inclined to criticise Wartenberg for choosing an easy case to argue. Rather than present their ideas in a clear and concise manner, some films encourage the viewer to explore certain ideas or topics through their ambiguity. Livingston takes particular interest in Ingmar Bergman's *Persona* (Bergman, 1966), an ambiguous film that arguably takes this approach. For most of its run-time, *Persona* is set on a bleak and isolated island off the coast of Sweden, and follows the increasingly cryptic and ambiguous relationship that emerges between a mute actress and the nurse who has been assigned to take care of her. As the film progresses, these two characters involuntarily find themselves losing track of their own individuality, to the point where aspects of their personalities and personal identities begin to overlap.

A compelling case for the philosophical merit of ambiguous films like *Persona* can be proposed through adopting the revised thesis that I have



outlined in this article. In the case of ambiguous films, more emphasis is placed on the interpreter, as the ideas within the film are not always explicit. In order to adjudicate interpretations of ambiguous films, I would argue that we require the condition of explanatory power. Using the revised thesis that I have proposed, a picture of *Persona* emerges that is more analogous to a philosophical text. Through creating *Persona*, Bergman not only encourages us to elicit a series of philosophical ideas through discussion and debate, but also provides us with the opportunity to use those ideas to enhance our understanding of existing philosophical issues, such as the nature of personal identity. The condition of explanatory power that I have proposed can be used to adjudicate these discussions and debates by determining which interpretations of the film best help us to understand the ideas within it. As this condition is not present in either the bold or the moderate thesis, I would argue that the revised thesis that I have presented is distinct from both.

Though the revised thesis that I have presented by no means settles the debate as to whether film can be philosophy, I would argue that at the very least it evinces how much of the existing debate is characterised in terms of a false dichotomy, that Livingston inadvertently perpetuates. Previously, I rejected the problem of paraphrase on the grounds that it could easily be overcome by revising the bold thesis. I argued that the bold thesis was too restrictive, to the point where it imposed an impossible standard on film that arguably was not required of other disciplines. I also argued that this double standard was perpetuated by the imposition objection, and I considered a case in which the condition of explanatory power that I advocated for could be applied to best interpret the ideas within a film, choosing *Modern Times* for my case study due to the existing philosophical literature on it.

Ultimately, though I have not arrived at a conclusive answer as to whether films can be philosophy, I hope to have made my reader receptive to the idea that there is a certain degree of grey area in this



debate in which there appears to be a genuine argument to be made for the philosophical status of certain films; *The Matrix*, *Modern Times*, and *Persona* being cases in point. Using the revised thesis that I have outlined in this article can help us to navigate through this divisive debate and come one step closer to a conclusive answer on the question of whether film can be philosophy.



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Does the Overdetermination Argument Show that Physicalism About Phenomenal Consciousness Must Be True?

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(General Category)

Abstract

Phenomenal consciousness concerns our subjective experience: that is, what it is *like* to be in a certain state. According to dualism, we can only explain phenomenal consciousness by accepting the existence of non-physical properties (or non-physical substances). Physicalists disagree, arguing that phenomenal consciousness can be accounted for without permitting anything non-physical into our ontology. This paper examines a key argument for physicalism, the 'overdetermination argument', which consists of three premises:

P1: Phenomenally conscious states can have physical effects.

P2: Every physical effect has a sufficient physical cause.

P3: The physical effects caused by phenomenally conscious states are not systematically causally overdetermined.

Conclusion: Phenomenally conscious states are physical states.

If the argument succeeds, then P1-P3 together establish the truth of physicalism. I contend that, although each premise *can* be denied, there are compelling reasons to maintain all of them, and thus, endorse physicalism. I begin in Section 1 by laying out how I will define physicalism; next, I explain each premise of the overdetermination argument and offer some reasons to think that all of them are initially



plausible. In Sections 2, 3 and 4 I assess each premise in turn, before concluding that the overdetermination argument powerfully motivates us to accept physicalism.

1) Introduction

1.1) Physicalism

For a state to be phenomenally conscious means that there is something that it is *like* to be in that state. There is a particular subjective experience associated with seeing turquoise, or having toothache, or tasting pineapple. For physicalism about phenomenal consciousness to be true, it must be the case that phenomenally conscious states or events such as these are ultimately physical. For the type-physicalist, this will be because some physical state or event is identical with some phenomenal state or event: they might argue, for instance, that pain *just is* C-fibre firing.

Alternatively, functionalist-physicalism defines mental states by reference to functional roles. To be in pain, for instance, is to be in a state with a certain causal profile: being caused by tissue damage, causing the creature experiencing it to avoid its source, and so on. This state might be realised differently across different species, individuals, or even one individual over time. Functionalism thus allows creatures of various physiologies to have mental states in common; for example, octopi can plausibly feel pain despite having no C-fibres (Robb and Heil, 2021, 6.1). Nonetheless, for the functionalist-physicalist, the realiser of a mental state will always be a *physical* state.

So, the physicalist's ontology excludes everything except the physical – but what exactly is meant by 'physical'? Hempel (1969) argues that this question poses a dilemma for physicalism. If defined by reference to *current* physics, then physicalism must be false. No one supposes that current physics is complete; physicalism so defined will be disproven as soon as the scientific consensus changes on any given issue. However, if it instead appeals to *future* or *ideal* physics, then physicalism is trivial. We



cannot know what such physics will contain; even irreducibly mental entities are definitionally physical on this account (Stoljar, 2022, 4.3).

However, Lewis (1983, p.361) suggests that physicalists can appeal to some future physics which, though somewhat improved, postulates entities very similar to those of current physics. Similarly, Papineau (2002, p.41) argues that we do not need to know exactly what an ideal physics would contain, only what it would *not* contain. Essentially, physicalists hold that consciousness can be explained without introducing something *radically* new, like irreducibly mental entities. I proceed with this understanding of physicalism.

1.2) The overdetermination argument

The overdetermination argument aims to show that physicalism about phenomenal consciousness follows from three premises:

P1: Phenomenally conscious states can have physical effects.

P2: Every physical effect has a sufficient physical cause.

P3: The physical effects caused by phenomenally conscious states are not systematically causally overdetermined.

Each premise is *prima facie* plausible. It seems that phenomenally conscious states can and frequently do cause certain physical behaviours. (This is true of mental states more generally - such as beliefs and intentions - but I mostly limit my discussion to states which are usually taken to be *phenomenally* conscious, like pain, hunger and thirst). References to phenomenal states feature heavily in our explanations of everyday actions: I have toothache, so I walk to the bathroom cabinet and take a painkiller; I feel thirsty, so I pour myself a drink; I taste pineapple, so I comment on its flavour.

We also have initial reason to accept P2: it is a statement of the 'completeness of the physical' (or 'Completeness'), a principle which draws support from physics and physiology (ibid, p.18). Take the



toothache example above; here, physiological evidence suggests that my (physical) limb movements when walking to the cabinet are caused by (physical) contractions in my muscles, which are caused by (physical) electrical messages travelling down my nerves, themselves due to (physical) activity in my motor cortex, and so on.

Also plausible is P3's denial that our physical behaviours are systematically overdetermined by distinct causes. Overdetermination occurs in, for example, a case where someone is simultaneously shot and struck by lightning; either event would have been causally sufficient for their death (ibid, p.18). Rejecting P3 would entail that overdetermination occurs not just occasionally, but in *every* case of mental causation. This is counterintuitive: overdetermination, while possible, certainly doesn't seem this ubiquitous.

Before continuing, I make one note about overdetermination. In the lightning/bullet example, either one of the lightning or the bullet would have been sufficient for the death. However, I think this is more than is required for an effect to be overdetermined. Consider the following: on suddenly noticing that their candleholder has caught alight, Jane and Jim simultaneously throw their glasses of water over it. Jane and Jim's actions are both causes of the fire's going out. But suppose that Jane's glass was full, and Jim's only half-full; suppose further that being doused with any less than one full glass of water would have been insufficient to extinguish the fire.

The fire would not have gone out if Jim had thrown his water and Jane not thrown hers, so Jane's action does not overdetermine Jim's. But, since it *would* have gone out had Jane thrown her water and Jim not thrown his, Jim's action *does* overdetermine Jane's - thus, this is still a case of overdetermination. I make this point because, while P2 states that every physical effect must have a sufficient physical cause, P1 does not similarly necessitate that the causally efficacious mental state must be a *sufficient* cause of the physical behaviour.



Returning to the argument at large, P1-P3 can be applied to an example as follows. My toothache, a phenomenal state, causes my walking to the bathroom cabinet. These limb movements have a sufficient physical cause *and* they are not overdetermined by a distinct cause. Therefore, my toothache cannot be non-physical - instead, it must be identical with some part of the sufficient physical cause.

Is this conclusion a problem for the functionalist-physicalist as well as the dualist? If conscious states are not identical with physical but with functional states, then conscious causes won't be identical with the physical causes.

I think this is resolvable. Suppose that *m* is a functional state, realised by the physical state *p*; m inherits *p*'s causal powers in virtue of their intimate relation. Further, since m works through *p*, there is no danger of overdetermination (Robb and Heil, 2021, 6.4). This is not *ad hoc*: we consider, for instance, temperature and pressure to be causally efficacious states, even though a given temperature or pressure is not *identical* to the specific molecular movements which realise it in any given case (Papineau, 2002, p.35). Thus, the functionalist has no problem, as long as they hold that the functional state must be *physically* realised.

So, to restate the argument:

Applying P1, *m* is a cause of my physical behaviour, p^* .

Applying P2, p^* has a sufficient physical cause, p.

Applying P3, p^* is not causally overdetermined.

Conclusion: *m* is physical.

To avoid the conclusion, the dualist must deny one of P1-P3. I now assess each premise in turn.

2) Analysing P1: Phenomenally conscious states can have physical effects



How might the dualist go about denying P1? One option is to reject causal interaction between the mental and physical altogether. Consider Leibniz's 'pre-established harmony', according to which God arranges mental and physical events so that they *appear* to interact. Mind and matter are analogous to two clocks keeping perfectly in time with one another: their synchronisation is attributable not to any interaction between them, but to the clockmaker who set them (Leibniz, 1696).

Less radically, one might embrace epiphenomenal dualism, which accepts causal interaction in only one 'direction': physical events can causally affect phenomenal events, but not vice versa. Some physical event p (C-fibre firing, say) initiates the causal chain of physical events which culminates in my limb movements. Further, p also causes my pain, which (being non-physical) cannot causally affect the physical world. On either view my limb movements have a sufficient physical cause, and they are not overdetermined by my pain.

One immediate objection is that such views are highly counterintuitive. Many of our phenomenally conscious mental states seem to have physical effects, and we frequently explain our behaviour by reference to such states. Denying P1 means we must accept that what it is like to taste pineapple has no causal impact on one's subsequently saying, 'This pineapple is delicious!', or that the phenomenal character of one's thirst has no causal impact one's subsequently pouring a drink.

Furthermore, if epiphenomenalism is generalised to mental states beyond those typically understood to be phenomenally conscious, it seems to rule out that we can ever act on the basis of our beliefs or intentions. But intentional action is 'central to our conception of ourselves as agents'; disciplines such as psychology and economics are built on the premise that our mental states affect our actions (Robb and Lowe, 2021, 1.1). Denying P1 would require a radical revision of our self-understanding, both in everyday life and in the social sciences.



The dualist might reply that our intuitions, although wrong, can be explained. We think that m causes p^* because of their temporal proximity: I experience hunger shortly before I eat, thirst before I drink, pain shortly before I walk to the cabinet where the painkillers are kept. But this is not because m has any causal effect on p^* , as I wrongly assume. Rather, it is because they share a common cause: God's will for the advocate of pre-established harmony; the occurrence of p for the epiphenomenalist.

In response, however, the physicalist need only ask what reason we have to accept this account over the simpler explanation that our mental states do causally affect our behaviour. Pre-established harmony and epiphenomenalism contravene 'Occam's razor', the principle that 'entities should not be multiplied without necessity' (Schaffer, 2014, p.645). Smart (1950) draws an analogy: all geological evidence is accommodated both by the theory that the earth was created 6000 years ago complete with all such evidence, and the scientific consensus which estimates the earth to be around 4.5 billion years old. The parsimony of the latter theory, however, delineates it as superior (ibid, pp.155-6). Similarly, epiphenomenalism and pre-established harmony are consistent with all the empirical evidence, but in order to explain the same phenomena as physicalism, they require that we also accept non-physical states into our ontology.

None of these considerations are completely decisive. Intuitions can be misleading; perhaps our conception of ourselves is mistaken. We can accept a complex over a parsimonious account if another consideration makes the latter untenable. Nonetheless, I would argue that there are very significant costs to giving up P1 in terms of plausibility and, as it stands, scientific theory choice.

3) Analysing P2: Every physical effect has a sufficient physical cause.



According to P2, (or Completeness) every physical effect - including every instance of physical behaviour - has a sufficient physical cause, which itself has a sufficient physical cause, *ad infinitum*. A sufficient causal explanation of any such behaviour won't need to appeal to anything non-physical. How might P2 be argued for?

Robb and Heil (2021, 2.4) argue that Completeness seems to be an empirical rather than an analytic claim. Accordingly, Papineau (2002, p.255) points out that Completeness did not become scientific consensus until around the 1950s, following the accumulation of relevant empirical evidence. In previous centuries, he claims, there was 'no compelling reason' to accept this principle, suggesting that Completeness cannot be justified on purely conceptual grounds.

Instead, as Papineau indicates, Completeness is usually supported by appeal to empirical evidence. One argument concerns fundamental forces: physics has discovered that all 'special' macroscopic forces reduce to a small number of basic, conservative physical forces. Inductive reasoning suggests that all such forces will reduce to the same set of physical forces (Robb and Heil, 2021, 2.4).

Secondly, if Completeness were false, we would expect to find human behaviours for which no sufficient neurophysiological cause could be found by tracing efferent motor neurons back into the brain (Melynk, 2003, p.187). However, no such 'gaps' have been revealed, even after decades of increasingly sophisticated physiological investigation (Robb and Heil, 2021, 2.4).

Besides motivating Completeness, however, the physicalist also needs to clarify it: how exactly should 'sufficient physical cause' be understood? Lowe (2000, p.575) defines a sufficient physical cause of p^* as a non-empty set of physical events, each of which is a cause of p^* and all of which jointly causally necessitate p^* 's occurrence. However, as Lowe



points out, not all formulations of P2 have the same implications for the argument.

For the overdetermination argument to succeed, Completeness cannot be so strong that it makes P3 redundant and begs the question. Consider 'f1': 'No physical effect has a non-physical cause'. Taken together with P1, f1 *already* entails that the mental state which caused p^* must be identical with (or realised by) some part of p^* 's sufficient physical cause (ibid, p.574).

Nor, however, can the formulation be so weak that it fails to deliver, in combination with P1 and P3, the physicalist conclusion. As will soon become evident, P2 needs to preclude any case in which some non-physical mental event m is causally necessary for some physical event p^* . (Assume that m refers to an irreducibly non-physical event for the remainder of this section.)

Another formulation, 'Every physical event which has a cause has a sufficient physical cause' (f2), falls short in this respect because it fails to account for the transitivity of causation. Suppose that p^* is caused by m, but that m itself has a sufficient physical cause, p. The fact that p causes p^* via a non-physical event m does not rob p^* of its sufficient physical cause, so defined (ibid, p.575-6). And, since m is necessary to produce p^* , m does not overdetermine p - so this scenario is consistent with each premise of the overdetermination argument if P2 is formulated as f2. The argument so formulated thus fails to deliver a physicalist conclusion.

This leads Lowe to consider the stronger formulation, f3: 'At every time at which a physical event has a cause, it has a sufficient physical cause'. Suppose that, in the scenario laid out in the previous paragraph, p occurs at t_1 , m at t_2 , and p^* at t_3 . At t_2 , p^* has a cause (m) but no sufficient physical cause; f3 successfully precludes this scenario. Furthermore, if p^* had a sufficient physical cause at t_2 then m would be unnecessary to



cause p^* , resulting in overdetermination. As desired, P3 is required to rule this out (ibid, p.576).

However, f3 fails to account for the possibility of simultaneous causation. Imagine now that p^* does have a sufficient physical cause at t_2 : p_2 . However, p_2 causes p^* in part by causing m, which also occurs at t_2 . For clarification, suppose that 100 'causal units' are required to cause p^* ; p_2 delivers 50 causal units by itself, and m delivers another 50. Had p_2 not caused m, only 50 of the required units would have been delivered, so p^* wouldn't have occurred. Once again, m is necessary for p^* , so f3 is not strong enough to do the work required of P2 (ibid, p.576-7).

This can be precluded by replacing f3 with f4: 'at any time at which a physical event p^* has a cause, then, without any non-physical events at that time, physical events are a sufficient cause of $p^{*'1}$ (Noordhof, 2022, s.36). Since p_2 is not sufficient to cause p^* at t_2 without m, f4 rules this scenario out.

Furthermore, f4 does not make P3 redundant. Suppose again that 100 causal units are required to cause p^* and, at t_2 , p_2 causes m which delivers 50 causal units. But now suppose that p_2 delivers not 50 but 100 units by itself. In *this* case, p_2 would have been sufficient to cause p^* even if it had not caused m. Alternatively, imagine that m is caused by an entirely separate chain of mental events. In either case, m is not necessary as a cause for p^* , so it is ruled out *not* by f4, but P3.

However, f4 comes at a cost. As mentioned, one motivator for accepting Completeness is that physiological research has discovered no physically inexplicable human behaviours. This absence of 'gaps' is excellent evidence against the case in which, at t_2 , p^* has a cause m, but no sufficient physical cause. Were this a reality, we would expect

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¹ All formulations can be made probabilistic, such that they allow for an indeterministic universe. F4 becomes: 'At any time at which a physical event p^* has a cause, then, without any non-physical events at that time, physical events are either a sufficient cause of p^* or they fix the probability of p^* ' (ibid, s.36). This does not affect my argument.



physiological research to have discovered at t_2 exactly such a gap. However, f4 *also* rules out cases of simultaneous causation in which both p_2 and m at t_2 are causally necessary for p^* . If *this* case were real, at every time at which p^* has a cause we would expect to find no gaps, but an apparent sufficient physical cause (p_1 at t_1 , p_2 at t_2) (ibid, s.37-41).

This is a serious objection. Nonetheless, I still think there is reason to accept Completeness so formulated. Firstly, the physiological evidence, while not as conclusive a defence for f4 as for f3, does at least suggest that *some* of the cases precluded by f4 are not empirical realities.

Secondly, I appeal again to Occam's razor. Suppose that we cannot know, by empirical investigation, whether p_2 is sufficient to cause p^* by itself, or whether it does so partly in virtue of causing m. Without evidence either way, we should endorse the more parsimonious account – which is, of course, the former.

4) Analysing P3: There is no systematic overdetermination

For P1 to be true, m must be a cause of p^* . For P2 to be true, p^* must have a sufficient physical cause as defined above, which entails that no non-physical event can be causally necessary for p^* . So, for the dualist who has accepted these premises, the only defensible scenario remaining is one in which p^* has a sufficient physical cause p, and an additional, unnecessary, cause m.

This is immediately implausible. As I argued with regard to P1, if the empirical evidence is accommodated equally well by the simpler physicalist account as by this one, general principles of scientific theory choice obviously favour the former (Papineau, 2002, p.28). Furthermore, systematic overdetermination seems to have 'clearly mistaken' counterfactual implications (ibid, p.27). Denying P3, it appears, entails that:



- C1) I would have walked to the cabinet even if my C-fibres had not been firing (because I had toothache); or $((m \land \neg p) \rightarrow p^*)$.
- C2) I would have walked to the cabinet even if I had not had toothache (because my C-fibres were firing); or $((\neg m \land p) \rightarrow p^*)$.

The dualist's position would be less implausible if they could avoid these counterintuitive implications. But, *prima facie*, avoidance seems difficult. By P2, m can never be causally necessary for p*. In order to deny C1), the dualist would have to argue that m can also never be causally *sufficient* for p*. For one, this seems to burden the dualist with an inexplicable fact. Furthermore, there is a sense in which this concession undermines m as a genuine cause of p*: if m can be neither necessary nor sufficient to cause p*, what explanatory work can it do?²

Denying C2) is harder still. Again, P2 dictates that p^* must have a sufficient physical cause, entailing that m cannot be causally necessary for p^* . So, it seems that if m were absent, p^* would still occur. C2) cannot be false if Completeness is true.

But perhaps this is too quick: the dualist may have another option. Maybe m and p are so counterfactually dependent that $(m \land \neg p)$ and $(\neg m \land p)$ are metaphysical impossibilities. If so, there could never be a situation in which I walk to the cabinet in the absence of C-fibre firing (because I have toothache), or vice versa (ibid, p.27).

The dualist might argue for this by appealing to Lewis' possible world semantics. On Lewis' account, the furthest possible world contains large-scale violations of natural law; closer worlds contain no such large-scale violations but differ significantly in particular facts; closer worlds still contain small-scale violations and minute distinctions of particular fact. A counterfactual is non-vacuously true when the closest possible world

² Kim (2018, p.215) makes a similar though not identical point.



where its antecedent and consequent are both true is closer than any possible world where its antecedent is true but its consequent false. It is false if the closest possible world where its antecedent and consequent are both true is further than any possible world where its antecedent is true but its consequent false. And it is vacuously true if its antecedent is false in all possible worlds. (Lewis, 1979; discussed in Moore, 2017, pp.27 -8).

If the antecedents of both conditionals are false in all possible worlds, then both conditionals are only *vacuously* true. In what relation might p and m stand to necessitate this counterfactual dependence? For the typephysicalist, this is easy. Both antecedents are false in all possible worlds because m and p are identical with each other, and it is conceptually impossible to have something without itself.

What about the functionalist-physicalist? On their account, m is not identical with but contingently realised by p. Part of functionalism's appeal is its allowing m to exist without a *particular* physical instantiation (it doesn't preclude octopi from feeling pain, for instance). So, clearly ($m \land \neg p$) is not metaphysically – or even, plausibly, *physically* – impossible. Nonetheless, m must be realised by *some* physical state or event. So, the nearest possible world in which ($m \land \neg p$) is true is, plausibly, a world in which m is realised by a very slightly different physical state or event, p_1 (ibid, p.35).

And, as Moore suggests, a world in which p is replaced by p_1 is very plausibly a world in which p^* is replaced by a very slightly different physical effect, p_1^* . Applying a consistent account of event fragility, if the toothache is realised by some slightly different neurological event, the limb movements it causes would differ very slightly in accordance (ibid, p.33). Given this, the functionalist can simply deny $((m \land \neg p) \to p^*)$: its antecedent is true, its consequent false.



What about $((\neg m \land p) \rightarrow p^*)$? Perhaps it is vacuous: although it is possible for toothache to be realised by some physical event other than p, perhaps it is not possible for the particular neurological event p to occur without realising toothache. Alternatively, $(\neg m \land p)$ might be possible in some world whose laws are sufficiently different from ours. I think this is also unproblematic for the functionalist. Physically acquiring a painkiller (p^*) is part of the causal profile which, by the functionalist account, defines a state as pain. Given this, I would argue that in any case where p causes the pain behaviour p^* , p also realises the functional state pain. If so, the conditional is straightforwardly false.

So, for the type-physicalist both counterfactuals are false; for the functionalist-physicalist one is false, the other either false or vacuous. The dualist, however, cannot appeal to either account. For them, m and p are not identical; nor is m a functional state which can be realised by p, but an ontologically distinct non-physical state.

Of course, there are other relations the dualist might invoke. Perhaps *p* invariably causes *m*. Maybe *m* always supervenes on *p*. But again, the dualist is tasked with explaining why these relations must hold - and hold not just in actuality but in *every possible world*. Once again, it seems that Occam's razor favours the physicalist account.

Conclusion

The overdetermination argument does not show that physicalism about phenomenal consciousness *must* be true; any of its premises can be denied without contradiction. However, denying any one of them has significant costs, particularly in terms of parsimony. In all, the argument provides strong motivation for both type- and functionalist-physicalism, while demonstrating the counterintuitive implications the dualist must accept.



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Should We Have Ontological Commitments to Numbers?

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Introduction

As a result of the widely held view that numbers are abstract, it is unclear at first whether or not we should have ontological commitments to numbers. An ontological commitment is a commitment to the existence of an entity, or a statement of what there is. Numbers appear to be both non-spatio-temporal and non-causal, thus one may at first deny ontological commitments to numbers, even if this seems to go against intuition. However, when considering our relationship with numbers and mathematics as a whole, it may become more attractive to hold ontological commitments to numbers. In this essay I will argue that we should have ontological commitments to numbers, whilst rejecting the mathematical platonism that argues that numbers are independent abstracta. Beginning with a partial defence of the indispensable nature of numbers, I will consider the problem of knowledge about numbers, a problem arising from numbers appearing abstract. From this problem I will assess both mathematical platonism and mathematical intuitionism, favouring mathematical intuitionism, the view that we should hold ontological commitments to numbers but not to their mindindependency. This favouring of mathematical intuitionism should dissolve the problem about knowledge of numbers, thus dissolving an important reason why one wouldn't have ontological commitments to numbers. I will then consider a critique of mathematical intuitionism, in which the necessity for proof is seen as inconsistent with modern mathematics, and will consider ways to bypass this issue.



Indispensability

One reason why we may want to have ontological commitments to numbers is that it would seem to be the case that numbers are required in the formulation of most scientific theories. This is summarised in W.V.O Quine and Hilary Putnam's indispensability argument, which states that numbers are indispensable in their ability to organise and assist with scientific theorising (Quine, 1964). With this in mind, we should have ontological commitments to numbers (or a commitment to the existence of numbers) in order to uphold our best scientific theories. This is notable in its premise that we should be committed to our best scientific theories, thus presenting both philosophy and mathematics as intrinsically linked to science.

This premise may form the basis of an objection, as our commitment to the best scientific theories cannot be necessary. A possible counterexample would be the disproving of the Aristotelian theory of motion, as described in his physics (1969) with the Newtonian theory of motion (1989). This counterexample shows the replacement of one scientific theory with another, leading to the older theory becoming anachronistic and discredited as an all-encompassing scientific theory of motion. Without some lack of commitment to the best scientific theories that currently exist, one cannot develop new scientific theories that can disprove the current scientific consensus. However, despite this it seems that new scientific theories require numbers as old scientific theories do, and the constant use of numbers in the creation of more accurate scientific theories over time may thus allow us to keep ontological commitments to numbers due to indispensability to scientific thought. At no point have numbers been replaced in scientific theorising.

Another influential objection to the indispensability argument is put forward by Hartry Field (2016). In this objection, Field argues that mathematics is not indispensable to science, and attempts a paraphrase method in which he removes all use of numbers in scientific theories,



using Newtonian gravitational theory as an example for successful nominalism (Field, 2016, 61-91). In doing this, Field aims to differentiate between mathematical entities and other theoretical entities, like some possible unobserved subatomic particles which may not be nominalised. If one was successful in nominalising mathematical entities in particular, one would show that entities like numbers are sufficient but not necessary for scientific theories. From this, Field aims to suggest that mathematical entities are thus no more than a dispensable fiction, something we have no need to hold ontological commitments to.

This objection fails on a number of grounds. First, as Michael Resnik notes (1985), Field's paraphrasing of Newtonian gravitational theory is only successful by the replacement of mathematics with geometry, which also involves abstracta in the form of shapes. When one form of abstract object has been replaced with another, we may question the benefits of such a theory. This objection is furthered by the similarity between mathematical objects and other abstract entities in our capacity for knowledge of them - there are no benefits of stating that we can know about geometrical abstracta but not mathematical entities. Second, even if Field was to nominalise Newtonian gravitational theory in a satisfactory manner, this would not entail that one could nominalise all other sciences, including our current best sciences. Whilst one may claim that Newtonian gravitational theory is broadly still the best science for the explanation of gravity, at least until it is applied to particles moving at speeds close to the speed of light, this does not account for the large range of topics considered in science, many of which require numbers to work. A further objection may be raised that Field has nominalised Newtonian gravitational theory using only geometrical objects that apply to Euclidian space. Other scientific theories that we ought to see as our best have worked outside of a Euclidian framework of space when dealing with large objects such as planets. With this in mind, Field's objection seems to fail as he cannot nominalise all of our best scientific theories using geometric abstracta.



In light of these objections, both of which seemingly fail to effectively undermine the indispensability argument, we may cautiously accept an ontological commitment to numbers, and thus to some form of mathematics, in order to uphold our ability to construct accurate scientific arguments. Whilst a commitment to a best scientific theory is less convincing, a commitment to the scientific method at all requires some ontological commitment to numbers. However, with this in mind a new question arises, which is integral in shaping what our ontological commitment to numbers looks like. This question may take the form of 'if we can accept that we should have ontological commitments to numbers, what are numbers?'. Not only will this question help shape our ontological commitments to numbers, but if no satisfactory answer is found, we may be forced to requestion our ontological commitments to numbers at all.

Mathematical platonism

One way in which numbers might exist is mathematical platonism. This is the view that mathematical objects, including numbers, are mindindependent objects that exist in the world, despite the fact that they are abstract. These numbers must then exist in a way that we cannot readily access, despite our ability to use them for science, mental activities like mathematics, and use in perceptual activities. Perceptual activities are those in which we use our senses in order to gain information. These perceptual activities provide one justification for mathematical platonism known as the one over many argument. We may view three cats and three dogs, from which we may infer that both have the property 'threeness', corresponding to a number, 3. However, the one over many argument has problems which lead to problems for any platonist trying to justify their theory using it. The inference there must be an abstract object 3 is invalid, as one may argue that the statement is nothing more than a brute fact, telling us nothing about abstract objects. A brute fact argument would take this form - 'we can see three objects, and from this



we can assert that there are three objects. We cannot assert anything about the number 3 from our interaction with three objects'. Thus an appeal to the one over many argument fails as a defence of mathematical platonism.

Another argument for mathematical platonism comes from the ability for platonists to account for true mathematical statements. It would seem common sense to say that mathematical sentences such as '3+6=9' are true objectively. If this is the case, and these sentences refer to a real truth, there must be objects which the values in the sentence refer to. This has a number of benefits, including the ability to deal with large numbers that humans may not be able to understand or think of. It also provides some legitimacy to the integral use of mathematics in science, which tends to have the aim of finding objective truths. However, the platonist theory of numbers has a number of problems which make it a less attractive option when choosing what numbers are in our ontological commitment to them, most notably the epistemological problem.

The epistemological problem

The epistemological problem is part of a wider problem around mathematical truth and knowledge presented by Paul Benacerraf (1973). In this problem a choice is given in which one may accept a theory of mathematics and numbers which has a good semantics or a good epistemology. With a good semantics comes an immediately satisfactory account of truth in mathematical sentences. With a good epistemology comes a satisfactory account of how we know about numbers. It seems to be impossible for a philosophical theory of mathematics to account for both semantics and epistemology in a satisfactory manner. In particular, Benacerraf notes the issue that this raises for mathematical platonism, as that which we claim to have knowledge of is through a causal connection between the known object and the knowing subject (Benacerraf, 1973, 671). If the platonist theory is correct, and numbers are real abstract objects outside of perception, we cannot have any



knowledge of numbers as they are abstract. Here we may consider abstract objects as non-spatio-temporal and non-causal. Thus the platonist leaves us with the conclusion that we have no knowledge of numbers.

One may attempt to refute this argument by replacing the causal theory of knowledge which leads to this result for platonism. This is as Benacerraf presupposes that in order to know about something, one needs to causally interact with the entity that they know about. However, other theories like reliabilism, which requires knowledge to be justified true belief formed in a reliable manner, still require some interaction with the object in order to obtain knowledge. This would constitute the reliability of the knowledge. It seems difficult to know about an entity that isn't concrete without any interaction with it, as one would require in order to reject Benacerraf's dilemma. Thus, denial of the causal theory of knowledge fails as a refutation as alternatives still fail to explain how we may know about numbers. As other theories of knowledge fail to adequately deal with Benacerraf's dilemma on the epistemology of numbers without a causal element, it would seem that the platonist is forced to accept no knowledge of mathematical objects like numbers at all.

In order to provide a better account of what ontological commitments to numbers entails, we may turn towards theories that have better accounts of how we know about numbers and mathematics. However, Benacerraf (1973) notes that this choice results in a theory with bad semantics, as we separate the truth conditions of mathematical statements from other forms of truth like that in perceptual activities. Despite this issue, a theory that has poor semantics but good epistemology is preferred. This is due to the magnitude of the consequences of taking either position. An account with good epistemology is forced to concede that mathematical truth is different to our general conception of truth. Whilst unattractive, the platonist being forced to concede that we do not have knowledge of



numbers seems a far worse option. Thus, we may consider options to base our ontological commitments to numbers on with good epistemology.

Mathematical intuitionism

One alternative theory of mathematics that may be considered is intuitionism. In this view, mathematical objects like numbers are seen as mental entities rather than the mind-independent abstract form that numbers take for the platonist. For most intuitionists, mathematics is a construct of the mind, created as a result of intuition and universalised by communication between mathematicians on mathematical truths. Thus, the intuitionist may hold ontological commitments to numbers only as mental entities, used constructively to build a system of mathematics which may then be applied in science in order to retain science's logical soundness. This deals with the epistemological problem as it can explain our causal connection to numbers. For example, the statement "I think about the number 3" can be explained causally as our intuition picks out a mental object '3' which we are then able to think about, by virtue of our causal connection to our thoughts. However, as Benacerraf (1973) notes, we are forced into an initially poor account of the truth-conditions of mathematical statements like '3+3=6', as unlike truth-conditions in the case of most sentences, mathematical statements seem to become subjective. This supposed subjectivity is due to the mental status of numbers, leading to their dependency on a thinking subject in order to exist. Whilst this is true, the communication from one mathematician to another about mathematical statements can provide some sort of grounding for mathematical truth, as once the truth of a statement is widely accepted it becomes indefeasible. This is a necessary cost in order to bypass the epistemological problem for mathematics.

Mathematical intuitionism has a wide range of effects on our rules of mathematics. As the truth/falsity of a mathematical statement can no longer be straightforwardly objective, due to there being no abstract



objects that we call numbers, we must seek a different meaning to mathematical statements other than their simple truth/falsity. This different meaning comes in the form of constructive proof, from which we may prove the truth or falsity of a mathematical statement. This proof then allows for a consistent and valid mathematical system, as one follows rules that construct the mathematical system - to retain consistency these proofs would also be non-defeasible, thus providing an element of necessity in mathematical truth. Similarly, the law of the excluded middle, which may take the form 'X or not X', is rejected, instead requiring a proof before stating the truth/falsity of a mathematical statement. Moreover, numbers thus gain a new purpose, as part of a system of constructive proofs which do not require them to be real in the sense of non-mental, as they are a key part of the mental construction of a mathematical system. This theory of numbers and mathematics not only deals with the epistemology of numbers, but also allows us to be "free in mathematics at every point" (Dummett, 1959, 162). Whilst the complexity of the constructive proofs may be a cost to the theory in comparison to the simple truth/falsity of platonist constructions of mathematics, the benefit of the freedom for future constructions and use of numbers and mathematics in different areas like sciences seems to be a useful benefit as we are seen to construct mathematics as we use it.

There are a number of critiques of intuitionistic mathematics which may lead us to reassess our ontological commitments to numbers as mental constructions, then used in physical reality with science. One such critique comes from Gottlob Frege, who argues that approaches like intuitionism fail as a result of their argument that numbers are mental entities used in constructive proof, and thus that mathematics can be reduced to a matter of psychology. Frege sees a distinction between the ambiguity of psychology and the precision of truth in mathematics (1953) which may lead to a rejection of any mental account for numbers.



However, the precision of truth in mathematics is not always found. Neither can this unambiguous account of truth be found in our best sciences, as evidenced by the possibility of new sciences to replace earlier theories once thought of as true. In mathematics, one example of ambiguity is the truth-value of Goldbach's conjecture. Goldbach's conjecture postulates that every natural number greater than 2 can be the sum of two prime numbers. Despite an inclination to say this is true, there is no definitive method for showing this. Intuitionistic mathematics may provide an appealing solution in its rejection of the law of the excluded middle, as it will allow one to avoid assigning truth/falsity to Goldbach's conjecture. This is appealing just in case a future proof is constructed which disproves our view on Goldbach's conjecture in the present.

Kurt Gödel also provides a problem with intuitionistic mathematics as in his incompleteness theorems he shows the inability for any consistent formal mathematical system to prove itself at all points, with some mathematical statements being necessarily unprovable (Gödel, 1992). This has one large consequence for the intuitionist, that being the sense that if we are to accept some mathematical truths as unprovable, we must accept that truth can transcend proof. In turn this may have consequences for our intuitionistic view on the ontology of numbers, as one could argue truth transcending proof shows numbers as being outside of our consciousness and mental constructions.

There are two options for the intuitionist at this point. One may accept the inability to prove some mathematical statements and thus withhold any truth-value from them. In this sense mathematics is essentially inexhaustible in our inability to assign a truth-value to all mathematical statements. Proofs are constructive, and thus attempt to show how we get to a mathematical truth. This does not require the non-constructive proofs that come with any formal system of mathematics.



On the other hand, one might argue that mathematics operates in a similar manner to language games (Wittgenstein, 1968) where rules are followed particular to that game or system. If proofs cannot be constructed in one consistent system, one may be forced to accept that there is no one consistent system which supplies the foundations for mathematics. This is noted by Juliet Floyd and Hilary Putnam (2000), who see attempts from Wittgenstein to bypass the incompleteness theorems using the idea of games. However, for practical purposes, along with the purpose of examining what ontological commitments to numbers entail, we may still be inclined towards a view similar to intuitionism, despite its flaws. This is as it may deal with the consistency of mathematical systems and helps explain ambiguity in some mathematical problems, as we simply fail to have a proof for them. Intuitionism also allows us to retain the commonsense view that numbers exist in some way, and provides an appealing solution to the problem of our knowledge of numbers.

Conclusion

To conclude, we should have ontological commitments to numbers due to their indispensable nature in science. However, whilst treating numbers as indispensable, we should avoid considering them as mindindependent as the platonist does. This is due to the necessity for a mathematical system to have a good epistemology in order to apply it to science. An attractive solution to this is intuitionism, in which numbers are mental constructions brought into being as part of proofs for consistent mathematical systems. Whilst there are some problems with intuitionism, it remains the best way to explain the existence of the numbers which we have ontological commitments to. In particular, the failure to find a single system that may supply the foundation for arithmetic does not compromise the requirement for a mental aspect of numbers that allows us to both know about them and construct proofs using them. The acceptable nature of intuitionism, along with the



benefits it has for epistemology, may shape our ontological commitments to numbers.



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On the Compatibility of Humanism with Sartre's Existentialism and Heidegger's Fundamental Ontology

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The debate about the compatibility between humanism and existentialism emerged after Jean-Paul Sartre's delivery of his famous lecture Existentialism Is a Humanism (1946). There, he defended existentialism against objections from the Communist and Christian communities, restored the groundings of his existentialist account, and declared existentialism a humanist philosophy. It was followed by various responses, among which one of the most notable is Martin Heidegger's Letter on Humanism (published in 1947), in which he distanced himself from both existentialism and humanism and criticised Sartre's use of ontological language.

Both philosophers agree on the rejection of traditional humanism and the need for its revision. However, they employ different strategies for restoring humanism. Sartre introduces existentialist thought as a humanist in the sense of absolute freedom and responsibility for human actions. Heidegger criticises his metaphysical framework and calls for a more radical revision by employing his critical ontology. The question is whether humanism is compatible with either Sartre's existential account or does it need Heidegger's ontological grounding or neither. In this essay, I will argue that humanism is compatible with Sartre's existentialist philosophy as it offers both plausible descriptive and normative elements of the human condition despite the charges imposed by Heidegger. Heidegger, on the other hand, presents an anti-humanistic (or rather



dehumanized) philosophy of being and struggles to fulfil the normative level of humanism.

The essay is divided into three sections. First, I look at Heidegger's ontology, namely his priority of universal Being over individual thought and subjectivity, his interpretation of all human being as Dasein and its essence, and his view on drawing values and meaning from the Truth of Being. In the second section, I summarize Sartre's existentialist account—his atheistic premise, reversal of essence-existence relation, his description of the human condition as absolute freedom and responsibility, and the notion of (inter)subjectivity. Lastly, I focus on the project of humanism. I briefly analyse the rejection of traditional humanism which considers predetermined human nature and creates a 'cult of humanity'. Then, I examine to what extent Sartre and Heidegger fulfil the descriptive and normative level of humanism.

I. Heidegger's Ontology

Heidegger embraces the task to investigate Being as it represents the single most important transcendental concept from which others derive. The fact that we use language and different senses of being imply that we already have some understanding of Being: we are "in such a way that, by being, it [we] understands something like being." (Heidegger 1996: 15). The method he employs is to explore one particular kind of being in order to describe the meaning of the universal Being.

The most striking is the human being, as it has a special position among beings of other entities. Human being crucially differs in the fact that the question of our being is self-directed: we are both subjects and object of the understanding of Being, as we are the ones who understand and we understand our own being. He labels this position Dasein – a plural noun which stands for all human being. Individual human beings are, then, cases of Dasein.



Dasein is determined by Being, but it also has the freedom and determines itself. Dasein has existence but the essence of Dasein is not given. The essence of Dasein lies, according to Heidegger, in its existence. Subsequently, it projects itself into the future and determines itself through individual actions – it influences the extent and way to which its (mine) Being is its (mine). Heidegger admits the possibility of becoming an individual, but again, this is not given. Instead, it is a possibility - a way Dasein can exist. To become an individual (become authentic), Dasein has to overcome social norms (they-self) by being-towards-death. That is, by realizing Dasein's mortality. Heidegger argues that all Being is conditioned by time (temporality), which, in the case of Dasein, is represented by its own death (as its ownmost possibility – the non-transferable, possibility of the impossibility of existence) (Heidegger 1996: 242-243).

Dasein finds values and meaning (necessary for making decisions) through an understanding of Being. The truth of Being, according to Heidegger, resides in language that enables us to explore the meaning of existence and time. Similarly, the being would provide us with a sense of what is valuable, "if we are attentive to the origin, we will find neither a void nor chaos, but rather the dimension of intimacy within the openness of what is" (Janicaud 1976: 145).

II. Sartre's Existentialism

Sartre's existentialism is atheistic as well. The denial of the existence of God serves as a premise from which follows the most crucial claim of existentialism: that in the case of human beings, existence precedes essence. Unlike in the case of animals, plants, and objects which correspond to a predetermined, universal conception (such as species), there does not exist any universal concept of what it is to be human. Universal human nature does not exist, as there is no deity which would conceive of it. Therefore, man first exists, encounters himself, and just afterwards can define himself. This self-definition occurs through a free,



conscious choice. Primarily, man exists as a projecting of self into the future. Only after materialisation and realization of the projecting he can become what he wills to be, meaning he can define himself via his actions, reaffirming his choices.

In choosing, he has absolute freedom, except that he must always choose. However, from such a strong notion of freedom follows that he becomes completely responsible for what he chooses, that is, for what he is. "Thus, the first effect of existentialism is to make every man conscious of what he is, and to make him solely responsible for his own existence." (Sartre 2007: 23). Furthermore, in choosing for himself, he chooses and is responsible for all men. Every one of us consistently picks good over evil for himself, and by the very act of choosing, we assign value to the options we consider good and claim them to be suitable for all. In this way, we paint "an image of man as we think he ought to be" (Sartre 2007: 24).

Next, from the atheistic premise follows that there is no a priori good. Values are not given to us by any higher power. Thus, in deciding between good and evil, we are left to ourselves. Quoting Dostoyevsky, Sartre claims the starting point of existentialism to be "If God does not exist, everything is permissible." (2007: 28-29) The absence of preapproved values and the possibility to justify our actions via human nature means that we are condemned to be free: "condemned because he [man] did not create himself, yet nonetheless free, because once cast into the world, he is responsible for everything he does." (Sartre 2007: 29). In this freedom without divine good, we create the values. The very act of choosing is valuable. No option is worthy before being chosen – the priority over others we assign to it produces its value.

Sartre's existentialism also introduces the concept of 'intersubjectivity'. The foundation of existentialism lies in Cartesian cogito – a subjective consciousness confronting itself. However, contrary to Descartes and Kant, Sartre argues that this self-awareness is, at the same time, a



realisation of the presence of others: "When we say "I think," we each attain ourselves in the presence of the other, and we are just as certain of the other as we are of ourselves" (2007: 41). Furthermore, perception of others is a condition of our existence because we cannot discover any truth about ourselves on our own. To be anything, we need to be acknowledged so by others.

III. Humanism

The traditional humanism that both Sartre and Heidegger reject consists of two problematic points. First, it presupposes human (humanistic) nature – a universal notion of what it is to be human. This opposes the crucial tenet of existentialism – that human existence precedes his essence. The second issue is that humanism traditionally takes man as an end and a supreme value. Sartre strongly argues against this: man cannot be taken as an end because he is "constantly in the making" (2007: 52) – he always reaffirms his choices through his actions and in doing so, he constantly reshapes the meaning of all humanity. Similarly, taking man as a supreme value and worshipping the whole of humanity based on the best achievements of a few individual men is absurd (Sartre 2007: 52).

Hence, Sartre feels the necessity to reintroduce humanism and does so by labelling his existential philosophy as new humanism. He defines existentialist humanism as follows: man is "always outside of himself, and it is in projecting and losing himself beyond himself that man is realized, and, on the other hand, it is in pursuing transcendent goals that he is able to exist" (2007: 52). The connection of transcendence, subjectivity and consciousness ensures that man becomes the legislator – in his tragic condition, he is able to make choices, create values, and seek goals outside of himself. As a result, he reaches an achievement of "realizing himself as truly human" (Sartre 2007: 53).

Heidegger's approach is different – he ponders on the need for humanism and ultimately claims his critical ontology to be rather



incompatible with the humanistic view. His reason for this is that he believes the traditional notions of humanism to remain metaphysical – according to Heidegger, in their depicting of human nature, they rely a too great extent on exiting interpretations of the world and its phenomena (Heidegger 2000: 87). In other words, "humanism is opposed because it does not set the *humanitas* of man high enough." (Heidegger 2000: 91) He claims that if the meaning of humanism was to be restored, it would need a new ontological language that resides in Being and is claimed through its understanding (Heidegger 2000: 88).

Humanism needs both descriptive and normative level. The descriptive account seems plausible in both Sartre's and Heidegger's thought. For Sartre, the crucial point is that existence of man precedes his essence, and he subsequently creates it by himself. Although Heidegger calls the relation between existence and essence in question, he describes the human condition as determined by Being that can be understood, and from this understanding comes the exploration of one's essence. The source of normativity is for Sartre each human – that is a view that contradicts the traditional humanism but it still allows for a normative element, although a one that is constantly changing and evolving by the actions of all men. However, Heidegger sees the source of normativity to be Being – a universal, transcendent entity. The normativity therefore does not reside in human at all, and at that point his ontology becomes incompatible with humanism.



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